Remarks

1. Summary of Office Action

In the Office Action mailed June 29, 2007, the Examiner rejected claims 1-26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent 6,490,624 (Sampson) in further view of U.S. patent 6,546,425 (Hanson).

2. Status of the Claims

Applicants have amended claims 1, 4, 6, 8, 10, 11, 13, 18, 19, 22, 25, and 26 to more clearly set forth the subject matter which Applicants regard as their invention. Claims 1-2, 4-6, 8-11, 13-15, 17-19, 21-23, and 25-26 are now pending in this application. Claims 3, 7, 12, 16, 20, and 24 have been cancelled. Of the pending claims, 1, 8, 13, 18, and 22 are in independent format, and the rest are in dependent format.

3. Response to Rejections

The Examiner has rejected each of the independent claims as being allegedly obvious over Sampson in view of Hanson. Applicants submit that the claims as originally written recited non-obvious subject matter compared with the cited art. However, for purposes of timely prosecution of this application, Applicants have chosen to amend the claims so that they more clearly set forth the subject matter which Applicants regard as their invention.

A. The Cited Art

Sampson teaches an architecture that manages sessions of the world-wide web protocol, HTTP (Fig. 3). A remote user first accesses one of potentially many authentication servers (Sampson, Col. 3, lines 14-15). If the user's session is deemed to be valid, the authentication server allows the user to access an appropriate set of information on one or more protected servers (Sampson, Col 3, lines 16-21). The HTTP sessions are managed by session managers

(Sampson, Col 3, lines 29-40). These HTTP session managers execute in accordance with the authentication servers (Sampson, Col 3, lines 57-67). Sampson primarily teaches methods of managing the redundancy of these HTTP session managers (Sampson, Col 4, lines 10-44). Sampson notes that the HTTP session managers could execute on a platform that includes a wireless link (presumably Wifi / IEEE 802.11 because of the LAN environment), but only in the sense that most communication applications can execute on platforms with wireless links (Sampson, Col 18, lines 25-29). Sampson fails to teach any aspect of session management that utilizes the specific nature of various wireless air interfaces.

Hanson teaches a mobile proxy server that exists between mobile nodes and their correspondent nodes (Hanson, Fig. 7). Rather than require each mobile node to communicate directly with its correspondent node, the mobile proxy server breaks the communication sessions into two parts (Hansson, Fig. 2). Between the mobile node and the mobile proxy server, the communication uses the so-called Internet Mobility Protocol (Hanson, Col. 3, lines 57-61). This protocol uses Remote Procedure Call (RPC), a well-known application layer protocol, and multiplexes all individual communications sessions between the mobile node and proxy server into a single virtual channel (Hanson, Col. 4, lines 48-60). In the limited extent to which it is mentioned, the Internet Mobility Protocol does allow multiple channels, but the advantages of these multiple channels is restricted to theoretically facilitating a guaranteed quality of service (Hanson, Col. 4, lines 60-65). Between the mobile proxy server and the correspondent node, standard communications procedures are used (Hanson, Col. 11, lines 61-67).

B. The Claimed Invention

The Applicants' invention is related to controlling voice over IP communication sessions in mobile networks with multi-channel wireless air interfaces. Without reference to any specific

claim, each of the claims generally describe, in varying levels of detail and with various related steps or components, methods and systems where a mobile device is engaged in a first voice over IP communication session using a channel of an air interface; a request to accept a second voice over IP communication session is detected; and then, upon accepting the request for the second voice over IP communication session, the first voice over IP communication session is put on hold (or suspended) at a serving node and the second voice over IP communication session uses the same channel of the air interface. As Applicants stated, in prior art systems, "if two or more communications sessions terminate on a mobile node, one or more of the sessions is suspended (put 'on hold'), while only one session is actively used on the mobile node" resulting "in the waste of airlink bandwidth ... since two or more airlink interfaces are being used to and from the mobile node, even though only one session is actively used on the mobile node [while] the other sessions are out 'on hold.' " (Applicants' Specification, paragraph [0009])

Applicants' system, however, puts the first voice over IP communication session on hold and uses the same channel of the same air interface that was being used by the first voice over IP communication session for purposes of the second voice over IP communication session. Advantageously, air interface capacity is saved via this technique.

C. Argument

Applicants submit that, especially in view of the amended claims, the rejection is improper and should be withdrawn because the combination of the Sampson reference and the Hanson reference does not teach each and every element recited in the amended claims, individually or in combination, as particularly set forth below.

i. Claims 1, 8, 13, and 22

Applicants submit that independent claims 1, 8, 13, and 22 teach elements not present in

the cited prior art. These elements include (1) a first voice over IP communication session using a channel of a wireless air interface, (2) the wireless air interface comprising multiple channels, (3) detecting at a mobile client a second voice over IP session or determining at a mobile client when a second voice over IP session is accepted at the mobile client, and (4) at a serving node, either intercepting the first voice over IP communication session and/or switching a second voice over IP communication session to the channel used by the first communications session.

The Examiner contends that the combination of Sampson and Hanson taught each and every element of the previous version of the claims. Applicants submit that the claims as amended are clearly novel with respect to the cited art. Sampson and Hanson do not teach a first voice over IP communication session using a channel of a wireless air interface, detecting or determining at a mobile client when a second voice over IP session is accepted at the mobile client, or at a serving node, either intercepting the first voice over IP communication session and/or switching a second voice over IP communication session to the channel used by the first communications session.

Applicants submit that this observation is sufficient to overcome the Examiner's rejection of claims 1, 8, 13, and 22. However, Applicants further submit that Hanson teaches away from the present invention because Hanson's teachings are limited to the functions of an application layer proxy server in a wireless environment. In particular, Hanson states that an aspect of their art, "[allows] the Mobile End System to maintain a continuous virtual connection even though it may temporarily lose its actual physical connection." In other words, Hanson is addressing the issue that, for various reasons, wireless communication links will lose connectivity from time to time.

In the context of present application, this "physical connection" of Hanson would have to

be the wireless air interface. However, the present application is distinct from Hanson, as it teaches an air interface with multiple communications channels. In particular, nowhere in Hanson is a discussion of intercepting data flow associated with the first voice over IP communication session on an air interface channel and switching data flow associated with the second voice over IP communication session to the air interface channel. The present application improves the efficiency of air interface utilization, regardless of the physical connectivity of the air interface.

As noted above, Hanson does disclose using RPC to form multiple virtual channels between a mobile node (MES) and the mobile proxy server (MMS), but does not teach in a reasonable level of specificity the physical characteristics of these channels or how they are used. In particular, it is well known to those with ordinary skill in the art that RPC is an application layer protocol, as RPC is a technique used by application developers for communicating between applications executing on different hosts in a network. Thus, a virtual channel implemented via RPC necessarily must exist at the application layer of the OSI protocol stack, the highest layer therein.

However, in the present application, "[a] communication channel is a physical channel used for communication of information…" (Applicant's Specification, paragraph [0021]). Thus, the communication channels recited in the present application necessarily must exist at the physical layer of the OSI protocol stack, the lowest layer therein.

Applicants submit that the combination of Sampson and Hanson do not teach several elements of claims 1, 8, 13, and 22. Accordingly, Applicants submit that claims 1, 8, 13, and 22 are allowable over the combination of Sampson and Hanson for at least the reasons recited above. Since claims 2, 4-6, 9-11, 14-15, 17, 23, and 25-26 depend from one of claims 1, 8, 13,

and 22, Applicants further submit that claims 2, 4-6, 9-11, 14-15, 17, 23, and 25-26 are allowable for at least the reason that they depend from an allowable claim.

ii. Claim 18

Claim 18 is an independent claim that teaches, "A network device for packet session control in a communication network that comprises a multi-channel air interface, the network device configured to switch a second voice over IP communication session associated with a mobile node to an existing air interface channel responsive to detecting that a first voice over IP communication session associated with the mobile node is suspended." The Examiner contends that Samson, Col. 10, lines 41-60, Samson Col. 14, lines 24-49 and Hanson Col. 2, lines 55-67 teach each and every element of this claim.

Applicants submit that the combination of Samson and Hanson does not teach each and every element of this claim. In particular, Samson, Col. 10, lines 41-60 teaches a set of information fields that comprise a session state, and proposes how to generate a unique pseudo random session identifier. Samson Col. 14, lines 24-49 teaches how sessions between a client and an authentication server are timed out. Hanson Col. 2, lines 55-67 merely discusses the general architecture of a wireless proxy server.

Applicants submit that combining these references to Sampson and Hanson does not teach each and every element of claim 18. Accordingly, Applicants submit that claim 18 is allowable over the combination of Sampson and Hanson for at least the reasons recited above. Since claims 19 and 21 depend from claim 18, Applicants further submit that claims 19 and 21 are allowable for at least the reason that they depend from an allowable claim.

4. Conclusion

In view of the foregoing, Applicants respectfully request favorable reconsideration and

allowance of all pending claims. Should the Examiner wish to discuss this case with the undersigned, the Examiner is invited to call the undersigned at (312) 913-3305.

Respectfully submitted,

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